

ART. XI.—*Additional Notes on the Lilydale Limestone.*

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The only additional information in regard to the Stratigraphical Geology of Lilydale that I have to record is that about half a mile to the west of the strike of the Limestone of Cave Hill, and running conformably with it, *i.e.* a few degrees to the east of north, and to the west of south, and dipping from 30° to 45° east, is a series of mudstones, shales, and shaly sandstones yielding a profusion of fossils, mostly casts, but very well preserved, specimens of which are to be seen on the table.

Among the *Brachiopoda* are “*Leptagonia deltoidea*,” “*Lep-tæna* sp.?” “*Orthis subquadrata*” and “*elegantula*,” “*Spirifer plicatellus*,” “*Pentamerus Australis*” and “*Rhynchonella Stricklandi*?” Among the *Lamellibranchiata* the most common form is “*Pterinea sub-falcata*” or an allied species. Of the *Gasteropoda* “*Bellerophon Cresswelli*” (Etheridge) is a common form. And of *Cephalopoda*, “*Orthoceras ibex*,” and “*capillosus*” are species that are both well represented. The *Trilobitidæ* are represented by “*Homalonotus Harrisoni*,” tails of which are very common, and *Crinoid* stems of the *Actinocrinus* type are also very abundant.

The fossils are easily obtained by splitting the shales along the planes of stratification, and the places which I have visited and from which I have procured specimens are:—

(1) A point on the Mooroolbark Road close to the gate of entrance to Mr. Kinsella’s farm, where the shale or mudstone is exposed under the overlying basalt in a cutting.

(2) On the old Melbourne Road, near the top of the hill, about half a mile above Lilydale, in the stuff thrown out of a sinking for a tank at Mr. Wilson’s.

(3) About three miles to the north of the last mentioned point, and about fifteen chains to the west of the road that leads past the cemetery (N. and S. road) at an old quarry, known as Hughes’ quarry.

In regard to the Cave Hill Limestone itself or rather it contained fossils, before giving any additional notes on this head, I have first to retract a statement I made in the paper read here in July of last year as to the occurrence of a gasteropod shell belonging to the genus "Stomatia," and which I called *S. antiqua*, supposing it to be the oldest Stomatia on record. This determination was an erroneous one, as it was founded upon what has since turned out to be a very imperfect specimen of a different shell, but which in its fragmentary form was so strikingly like a Stomatia that I was quite "taken in" by the appearance of it. However, I remarked at the time that the whorls were steeper in the sides and more flattened than Stomatias usually are. A somewhat better specimen has convinced me that the shell is not a Stomatia at all, but what it exactly is, it is difficult to say at present, for even this specimen is by no means perfect. It is possibly a very eccentric Trochus, eccentric of course in the literal sense of the word in having the axis or columella very remote from the centre, and besides this the whole shell is much depressed for a Trochus. However, I have learnt caution, and will endeavour to get a better specimen before committing myself to anything beyond the assertion that it is not a Stomatia.

EUOMPHALUS (ORIOSTOMA) NORTHI.

I have much pleasure in being able to exhibit on the table this evening a tolerably perfect specimen of *Euomphalus Northi* (or according to Mr. Etheridge, *Oriostoma Northi*) with the operculum that has been the subject of so much controversy *in situ*. The controversy as to the operculum has been first as to the nature of it, some taking it for a nummulite, and some for the lid of a coral, others for the vertebra of a fish; but I think there was a general consensus of opinion amongst our Victorian geologists from the first that it was the operculum of a gasteropod shell, the only difference amongst us being as to what species of shell it belonged to; some thinking it was the operculum of *Cyclonema* others that it belonged to *Euomphalus* (or *Oriostoma*) *Northi*.

The discovery of the specimen exhibited to-night must for ever set at rest any further dispute both as to the nature of it and as to the species to which it belongs. It is a veritable operculum, and

as certainly belongs to *Euomphalus* (or *Oriostoma*) *Northi*, for there it is *in situ*, and a grain of fact is worth a pound of theory.

And now a word or two as to the bearing of this discovery on the question as to the true genus to which the shell itself belongs. Although, in deference to Mr. Etheridge, I have quoted it by the generic name he has given it, viz., *Oriostoma* as an alternative to our name *Euomphalus*, Victorian geologists had always recognised it as a *Euomphalus*, and it appears to me that the form of the operculum it is now found to have possessed confirms our view, for, as Mr. Etheridge himself admits, *Oriostomas* have conical opercula, whereas this operculum is plano-concave and multispiral, or rather many times concentric, more like that of *Euomphalus*. As a further point of resemblance to *Euomphalus*, it is well-known that in *Euomphalus* the apex of the whorls is often filled up by a secondary deposit of shell and the interior is often divided off by transverse shelly partitions. Well, the same feature is also to be seen in our genus when ground down, as exhibited in the large specimen on the table; as however this is a feature not confined to *Euomphalus* alone, but often found in other shells of lengthened spire as well, it can only be regarded as a slight confirmation. It would be presumption on my part to differ from so high an authority as that of Mr. Etheridge in a matter of Palæontology, were I not fortified by the result of an appeal to another high authority, for I have shown this specimen to Professor Sir F. McCoy, and he tells me it is not the first he has seen from Lilydale with the operculum *in situ*, for Mr. Pritchard showed him an imperfect specimen of the same kind some years ago, and he authorizes me to state that he regards the shell as certainly an "*Euomphalus*," and not an "*Oriostoma*" at all, the latter being a name he restricts to a Tertiary genus.

NISO (*VETOTUBA*) BRAZIERI.

There is a species of Gasteropod shell which Mr. R. Etheridge has described in the records of the Australian Museum, Sydney, vol. i., No. 3, as occurring in the Cave Hill Limestone at Lilydale, and to which he has given the name of *Niso* (*Vetotuba*) *Brazieri*. He says the material for giving a description of the shell is very imperfect, but he has provisionally called it a *Niso*, on account

of its resemblance to that genus in several particulars, and especially in its having an umbilical cavity extending the whole length of the shell, but as *Niso* is not elsewhere known to occur as far back as the Upper Silurian, he suspects that further examination may show it to differ from *Niso*, and in that case he proposes to call it *Vetotuba*. I may mention that I have found several more perfect specimens than the one he figures, demonstrating that which he surmises as possible, a very marked difference to *Niso* in that the umbilical cavity appears to project below the base of the shell in the form of a short tube, somewhat like the anterior canal of a *Cerithium*, only straight instead of abruptly turned to one side, and being an extension of the hollow columella, and not a mere prolongation of the mouth. Under these circumstances I prefer to adopt Mr. Etheridge's alternative name *Vetotuba*. There are at least two species if not more of these turreted shells belonging to the *Pyramidellidæ*. The above remarks apply more especially to the one he figures under name *Niso* (*Vetotuba*) *Brazieri*, and which, as he says, has no more than twelve whorls. I have however in my possession and on view to-night, another species much more slowly tapering and consisting of nearly twenty whorls, but the anterior part is not sufficiently perfect to define it, and so we must wait for a better specimen. Besides this I may mention that there is a small species that has more resemblance to a true *Niso*.
